## **CLAIMS**

1. A method of determining the service metal temperature of a  $\gamma/\gamma'$  MCrAlY-coated component after the use in a high temperature environment, where the  $\gamma/\gamma'$ -MCrAlY-coating (6) applied to the component exhibits a non-equilibrium  $\gamma/\gamma'$ -microstructure at a temperature lower than the temperature during operation and the depletion of chromium from the  $\gamma/\gamma'$ -MCrAlY-coating still allows the  $\alpha$ -Cr phase to form, the method comprising the steps of

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- (a) measuring the coating electrical conductivity and magnetic permeability of the MCrAlY-coating (6) at different locations of the components by means of a multi-frequency eddy current system and
  - (b) determining the exposure temperature of said different locations of the components from the measured conductivity and permeability.
  - 2. The method according to claim 1, wherein the method is applied for a coating (6) consisting of (wt.-%) 25% Cr, 5.5% Al, 1% Ta, 2.6% Si, 0.5%Y, Rest Ni and unavoidable impurities.
- 20 3. The method according to claims 1 or 2, wherein using the method for determining the service metal temperature of a gas turbine blade.